Sustainable Design & Development for Military Facilities

HQUSACE

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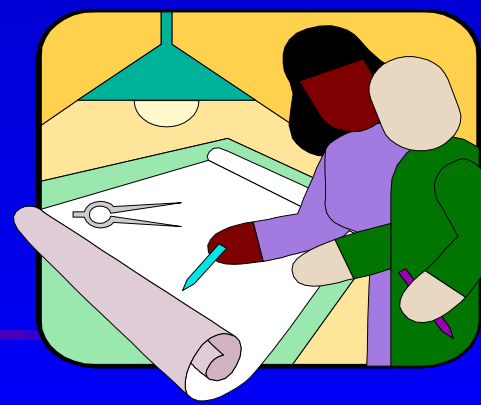
What Does Sustainable Design Mean In The Army?

- Environmentally friendly and energy efficient facilities and infrastructure;
- Holistic process;
- Meets current missions; and
- Accommodates future missions.



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Background

- SPiRiT is required for the rating of all Army projects;
- SPiRiT is based on LEED 2.0 Green Building Rating System™ and used by legal agreement between the Corps and USGBC;
- SPiRiT was developed to meet Army installation requirements not addressed by LEED 2.0; and
- SPiRiT incorporates the “best of the best” concepts from many similar rating systems.

http://www.cecer.army.mil/SustDesign/SPiRiT.cfm

SPiRiT Scoring

Green Results

Sustainable Sites:	20
Water Efficiency:	5
Energy and Atmosphere:	28
Materials and Resources:	13
Indoor Environmental Quality:	17

Life-Cycle Synergy

Facility Delivery Process:	7
Current Mission:	6
Future Mission:	4

TOTAL	100

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SPiRiT Rating

- Points: 100 Possible.
- Score at least the following number to obtain the indicated rating:
  - 75-100: Platinum
  - 50-74: Gold
  - 35-49: Silver
  - 25-34: Bronze
- Goal-Bronze for now, Gold starting FY06

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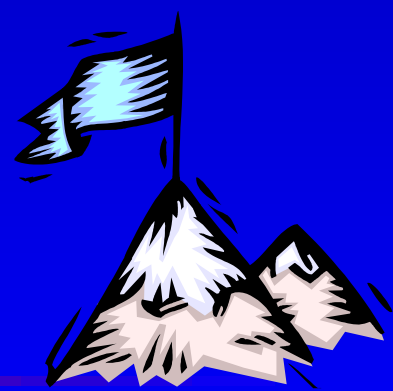
How to Implement

- Conduct planning **charrette**
  - Identify points: sure and tentative
  - Identify costs to go from Silver to Gold
- Select A/E with **experience** in SDD
  - CBD language
- Provide A/E SDD web address
  - www.cecer.army.mil/sustdesign
- Conduct design charrette
- Refine cost estimates-3086



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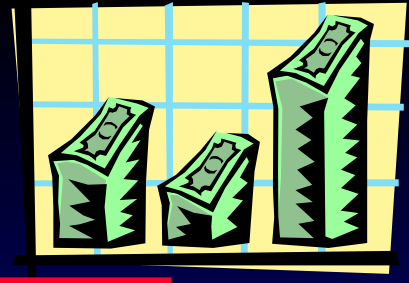
How to Implement



- If 3086 is complete, PA locked and unable to achieve goal revisit SPiRiT, re-estimate the project and advise HQPM via MSC.
- No validation by third party required
- District, A/E and customer to score the design against SPiRiT at every stage. Keep score card in project file
- For D/B projects RFP to have goal and identify added costs

SPiRiT Divisions & Roles

SPiRiT Divisions and Roles	Architect	Landscape Architect	Interior Designer	Civil Engineer	Structural Engineer	Mechanical Engineer	Electrical Engineer	Owner / Operator	Contractor/Builder	Installation Master Planner	Environmental Engineer
1.0 SUSTAINABLE SITES											
Erosion, Sedimentation, and Water Quality Control	C	C		R					C	C	C
Site Selection	C	C		C				R		R	C
Installation/Base Redevelopment	C			C				R		R	
Brownfield Redevelopment				C				R		R	C
Alternative Transportation	C			C				R		C	
Reduced Site Disturbance	R	C		C				C	R	C	C
Stormwater Management	R	C		R	C	C				C	C
Landscape and Exterior Design to Reduce Heat Islands	R	R		C	C			C	C		
Light Pollution Reduction	R		C				R	C	C		
Optimize Site Features	R	R		C				C		C	C
Facility Impact	R							C		C	C
Site Ecology		R						C		C	R
2.0 WATER EFFICIENCY											
Water Efficient Landscaping	C	R		C			C	C			C
Innovative Wastewater Technologies	C	C		C		R		C			C
Water Use Reduction	R					R		C		C	C
3.0 ENERGY AND ATMOSPHERE											
Fundamental Building Systems Commissioning	R		C		C	C	C	C	C		
Minimum Energy Performance	R		C			C	R	C			
CFC Reduction in HVAC&R Equipment	R					C					
Optimize Energy Performance	R		C			R	R	C			
Renewable Energy	C						R	C		C	C
Additional Commissioning	R			C		C	C	C	C		
Measurement and Verification	C					R	R	C	C		
Green Power							C	R		C	
Distributed Generation	C						R	C		C	C

http://www.cecer.army.mil/SustDesign/ArmyProjects.cfm

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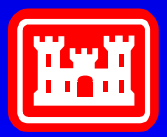
SPiRiT Point 'Tracking'

FACILITY SUMMARY POINTS		Max. Points	TEAM SCORING 1	2	3	Notes	Action	Status	Responsibility	Points Status
2.0	**Water Efficiency (W)**	**5**	**4**	**3**	**2**					
2.C1	Water Efficient Landscaping	2	2	1	2					
	Use high efficiency irrigation technology, OR, use captured rain or recycled site water to reduce potable water consumption for irrigation by 50% over conventional means. (1)						Not cost effective	COMPLETE	KZF|BWSC & DSCC	0
	Use only captured rain or recycled site water for an additional 50% reduction (100% total reduction) of potable water for site irrigation needs, OR, do not install permanent landscape irrigation systems. (1)						No permanent landscape irrigation is to be installed.	COMPLETE	KZF|BWSC	1
2.C2	Innovative Wastewater Technologies	1	0	0	0					0
	Reduce the use of municipally provided potable water for building sewage conveyance by a minimum of 50%, OR, treat 100% of wastewater on site to tertiary standards.						Not attainable.	COMPLETE	KZF|BWSC	
2.C3	Water Use Reduction	2	2	2	0					
	Employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation) after meeting Energy Policy Act (EPACT) of 1992 fixture performance requirements. (1)						Final specifications Section 15400A, Plumbing, General Purpose, will include fixtures with flow restrictors to achieve a 30% reduction in water use.	ONGOING	KZF|BWSC	1
	Exceed the potable water use reduction by an additional 10% (30% total efficiency increase). (1)						Final specifications Section 15400A, Plumbing, General Purpose, will include fixtures with flow restrictors to achieve a 30% reduction in water use.	ONGOING	KZF|BWSC	1
3.0	**Energy and Atmosphere (E)**	**28**	**12**	**13**	**14**					
3.R1	Fundamental Building Systems Commissioning	Req'd.	-	-	-					
	Implement all of the following fundamental best practice commissioning procedures.									
	Engage a commissioning authority.						DSCC to answer.	TBD	DSCC	



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DSCC Physical Fitness Center

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Physical Fitness Center
DSCC (Columbus, OH)

Life Cycle Synergy

Facility Delivery Process
- Team / goal setting charrette / design reviews

Current Mission
- O& M manuals included in final specifications.
- Design incorporated Design Team comments on high quality indoor environment to satisfy users

Future Missions
- Very efficient layout eliminating all unnecessary building circulation / minimal building footprint

Green Results

Sustainable Sites
- Site selected to take advantage of existing adjacent power plant, roads, parking, and water retention basin
- Landscaping to reduce thermal gain and heat islands
- Grass pavement system for required fire truck access

Water Efficiency
- No permanent irrigation system is installed
- Fixtures flow restrictors to achieve a 30% reduction

Energy and Atmosphere
- Designed to achieve TI 800-01 energy performance criteria (required DET 570 MJ/sqm/Yr -- calculated energy usage is 565.25 MJ/sqm/Yr.)
- LCA of energy recovery units, added polyisocyanurate roof insulation, and improved energy efficient windows
- Solar shading for windows / operable windows

Materials and Resources
- Site landscaping from relocated trees
- Use of recycled content steel structure, concrete masonry, and floor finishes
- Excess previous project granite pavers / wall cladding incorporated into exterior finishes

Indoor Environmental Quality (IEQ)
- Use of low / no VOC paint
- User thermal /auditory comfort, views, daylighting and systems controllability optimized for facility function

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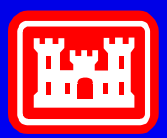
FY 2002 SHOWCASE PROJECTS

PN	INSTALLATION	PROJECT	PA($000)
52830	Ft. Richardson	Whole Barracks Renewal	45,000
30629	Ft. Gordon	Communication Facility	11,000
52954	Camp Jackson	General Instruction Building	6,100
2298	Ft. Polk	Education Center	10,800
43707	Ft. Monmouth	Military Prep School	20,000
41746	Ft. Lewis	Whole Barracks Renewal	48,000



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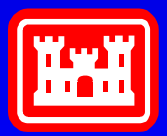
FY 2003 SHOWCASE PROJECTS

PN	INSTALLATION	PROJECT	PA($000)
048707	Ft. Benning	Barracks Complex	45,000
041631	Ft. Bragg	Barracks, Armistead	50,000
048674	Ft. Campbell	Barracks, Range Road	49,000
052068	Schofield Bks.	Barracks, Foote Ave-C	42,000
057341	Ft. Wainright	Mission Support Training	25,000
55837	Ft. Detrick	Community Support Center	2,850



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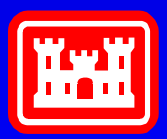
FY 2004 SHOWCASE PROJECTS

58604	Ft. Huachuca, AFH
57785	*Ft. Wainright, AFH*
58677	*Ft Knox, AFH*
34082	*White Sands, AFH*
51112	*Ft. Campbell Barracks*
34048	*Schofield Barracks, Info Sys Facility*
53321	*Ft. Gilem, Special Purpose Facility*
54214	*Camp Casey, Barracks*
53513	*Ft. Richardson, Barracks*
44794	*Ft. Lewis, Barracks*
44122	*Ft. Drum, Barracks*
23652	*Ft. Hood, Barracks*



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FY 2005 SHOWCASE PROJECTS

PN	INSTALLATION	PROJECT
57069	Ft. Huachuca	AFH
57073	Ft Richardson	AFH
57070	White Sands	AFH
57041	Yuma PG	AFH
59074	Camp Casey	Senior Leaders Quarters
52263	Schofield Barracks	WBR phase 3B
51174	Ft Leavenworth	CGSC
33409	Ft Drum	WSAAF, PH 2
45190	Ft Irwin	Command and Control Facility
58799	Ft Campbell	CSG Barracks
36403	Ft. Campbell	5th SFG Barracks
44795	Ft. Lewis	Barracks
56449	Ft. Leavenworth	Lewis and Clark Ins. Facility
53608	Ft. Carson	Barracks

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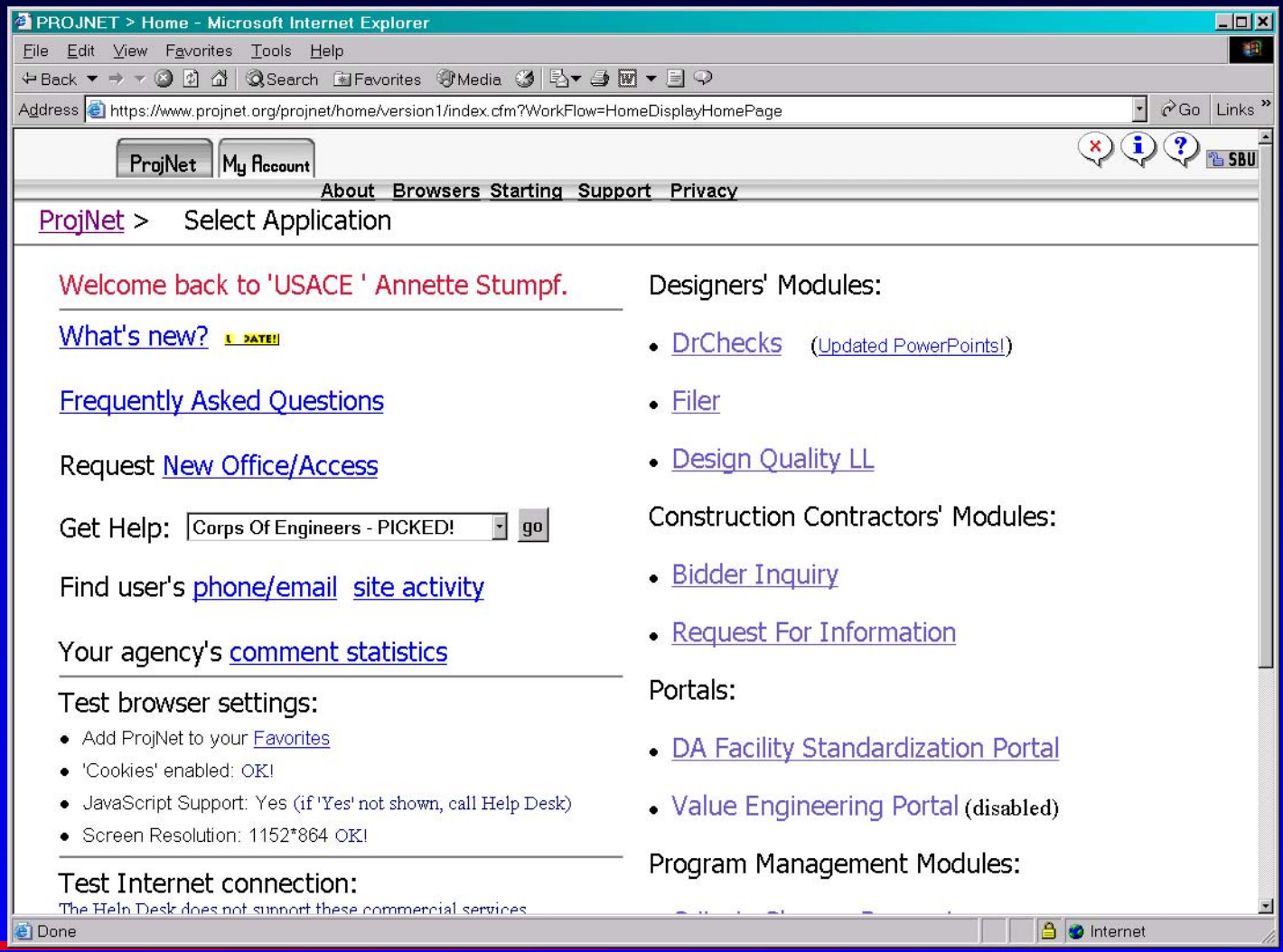
Use DrChecks for SDD Reviews



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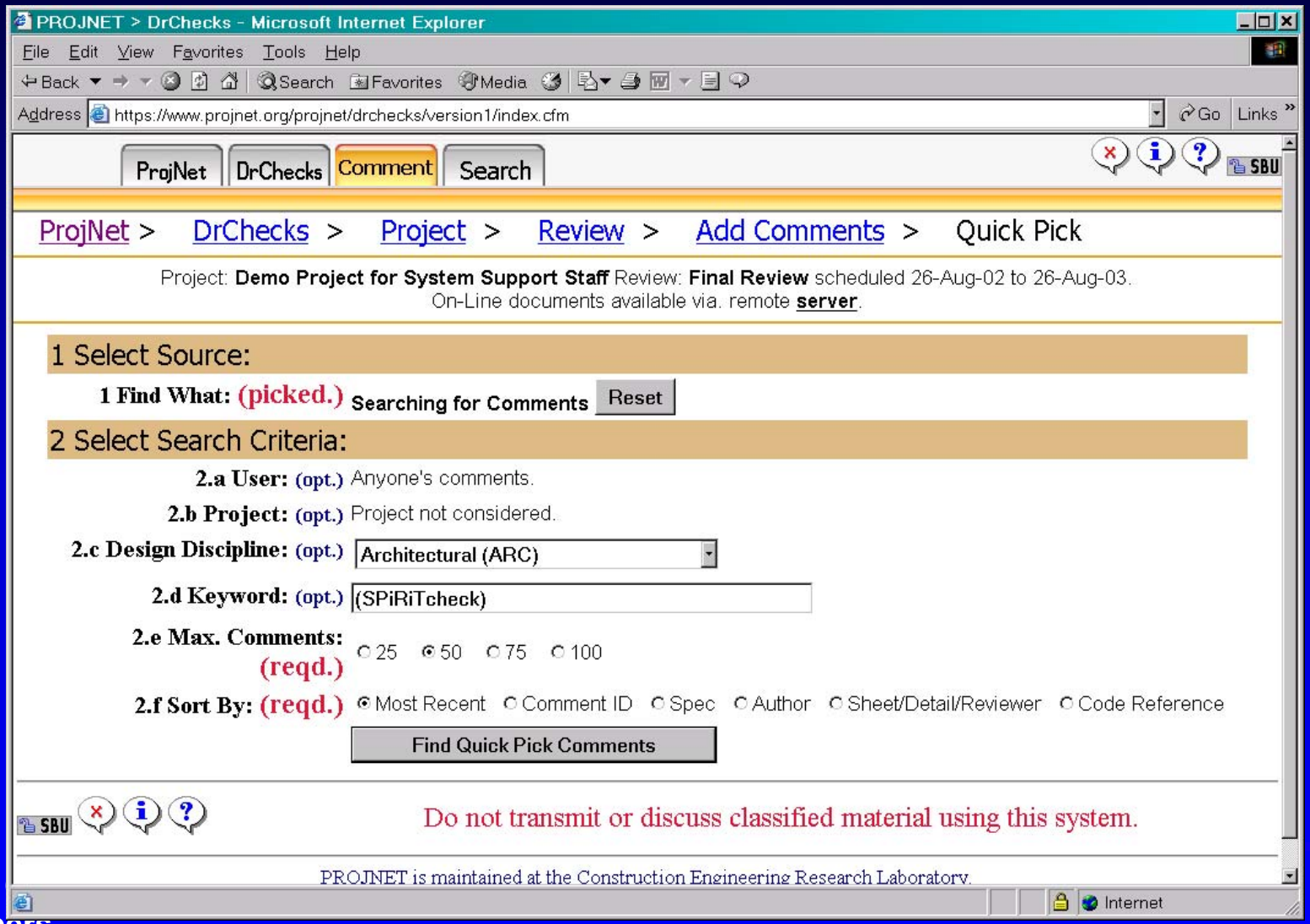
http://www.projnet.org/

Use QuickPick to find applicable SPiRiT comments



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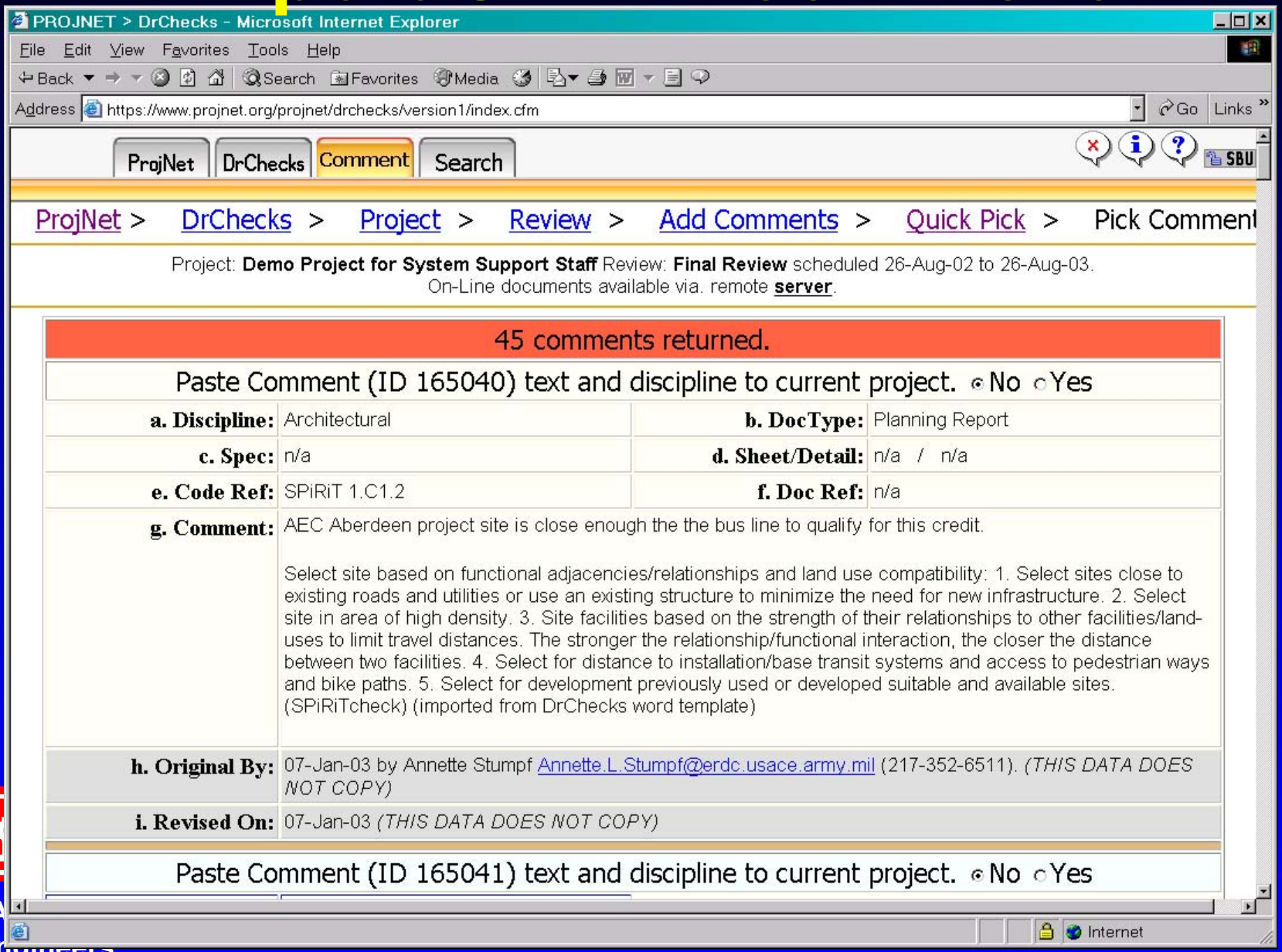
Import SPiRiT comment



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